

# Automated wheelchair using IOT

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The Internet of Things (IoT) describes the network of physical objects—"things"—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.

IOT has many applications in the real world and the automated wheelchair is one of the example for its applications.

This automated wheelchair enables users such as physically challenged people to move from one place another place. It helps the users to move of their own without any other persons involvement.

For example let us consider some localized areas such as malls, hospitals, bus stop, railway station etc. In these areas the physically challenged people can simply sit and travel from one place to another place by giving a simple instruction.

The instruction can be given through the application and the application is developed in such a way that the instruction can be given both in text and audio format so that both blind and physically disabled person can use the service. Currently some automated wheelchairs are available in the market but we have to operate the wheel chair to travel from one destination to another destination but the automated wheel chair that we have designed will drive automatically once we fixed the destination like a tesla car.

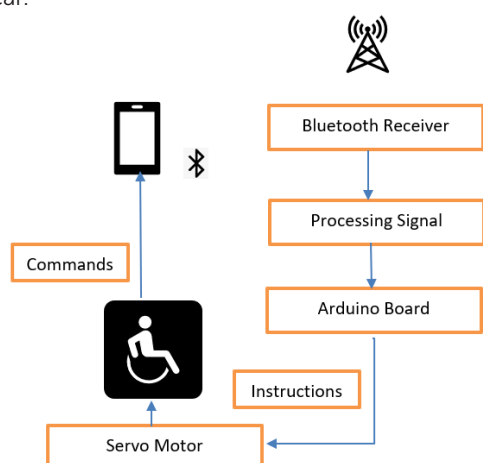


Fig. 1: Process Flow

## Work Flow:

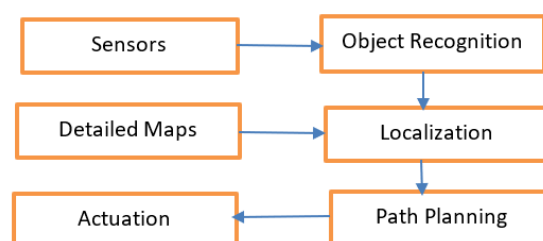


Fig. 2: Work Flow

## Sensors:

A sensor is a device that detects input of any kind from the physical world and reacts to it. Light, heat, motion, moisture, pressure, and a variety of other environmental phenomena can all be inputs. The output is typically a signal that is translated into a display that can be read by humans at the sensor location or that is electronically sent over a network to be read or put through more processing.

## Object Recognition:

Object detection determines whether or not an object is visible in a picture. It establishes its position within the frame. Although the algorithm utilised to do this task is rather straightforward, it yields effective results. Sensors collect data according to the IoT standard. Instead of sending data across the network or to the cloud, it is more effective to process this continuous stream of data (such as from a video camera) on the sensors.

Cameras carry out object detection along with related activities like object classification and counting. The device's efficiency is increased by performing this preprocessing work locally because extra network traffic is prevented.

## Localization:

One of the most alluring IoT applications is localization-based services. They are actually able to gather and send data in order to pinpoint the location of the target because of the deployment of sensor networks. The literature has numerous localization system proposals.

### Path Planning:

Any autonomous mobile robot must perform path planning in order to determine the best free path from a given starting place to a specified objective. In this work, a novel approach based on the internet of things (IoT) has been developed; robot platforms are employed for path following, while microprocessor-based gadgets are used for path development. In order to construct a hybrid technique using fixed cell decomposition for the environment and create a map of this environment, two separate algorithms, Bug0 and Potential Field, are combined.

### Actuation:

A physical object ("thing") plus a controller ("brain"), sensors, actuators, and networks make up an Internet of Things device (Internet). A machine component or system known as an actuator moves or controls a mechanism or a system. The device's sensors gather information about its surroundings, and control signals are then created for the actuators in accordance with the activities that must be taken.

An actuator is something like a servo motor. They can move to a defined angular or linear location and can be either linear or rotatory actuators. To meet our needs, we can employ servo motors in IoT applications to rotate the motor by 90 degrees, 180 degrees, etc.

### Detailed maps:

The process of mapping involves obtaining geographic data such that the user may interpret latitude, longitude, depth, and other dimensions to represent the positions of objects and, optionally, their qualities (such as roads or towers). There are a wide range of potential uses for maps, including in the fields of urban planning and navigation. The application of mapping technology is possible in a variety of industries, including media and entertainment, construction, the healthcare sector, and others.

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### About the Author



**Eswar Patnala** pursuing PhD from Gitam Institute of Technology, GITAM. He has been working as Assistant Professor in the department of Information Technology at JNTUGV, College of Engineering, Vizianagaram from last nine years. He has published Various International Journals and Book Chapter.